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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/467,992	12/20/99	FORBES	L 303.389US2

EXAMINER	
LEE, F	
ART UNIT	PAPER NUMBER
2815	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary	Application No.	Applicant(s)	
	09/467,992	FORBES ET AL.	
	Examiner	Art Unit	
	Eugene Lee	2815	

-- The MAILING DATE of this communication appears on the cov r sh et with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 1999* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 17 thru 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wen '509. For example, in FIG. 3, Wen discloses a memory cell trench storage capacitor 100 comprising a polysilicon layer (polycrystalline semiconductor material) 114, capacitor dielectric layer (insulator layer) 116, doped polysilicon fill (polycrystalline semiconductor plate) 118 and p+ doped semiconductor substrate 110.

Regarding the above claims, it is well known in the art that capacitor plates are inherently connected to source/drain regions of peripheral transistors. It is also well known that bit and word lines are coupled to source/drain regions and gates of access transistors along with a column decoder and row decoder to access the cells of an array. These positions are supported by Pfiester '385, Forbes et al. '618, and Wahlstrom '452.

The basis of the combination is that Wen's trench capacitor is used in conventional memory cells, for example, like the ones shown in Pfiester '385, Forbes et al. '618 and Wahlstrom '452. It would have been obvious to one of ordinary skill in the art at the time of invention to use the trench capacitor of Wen in typical memory cells like Pfiester, Forbes and Wahlstrom since Wen specifically states that the trench capacitor is used for memory cells and,

therefore, can provide a capacitor with increased surface area and capacitance for the memory cell (as stated in the abstract) to offset the continued miniaturization of semiconductor devices.

Product-by-Process Limitations

While not objectionable, the Office reminds Applicant that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. Note that applicant has the burden of proof in such cases, as the above case law makes clear. Thus, no patentable weight will be given to those process steps which do not add structural limitations to the final product.

Regarding claims 20, 21, 23, 24, 27, 28, 33, 34, and 35, the following claims recite a limitation that does not offer any structural variation to the final product. Therefore, any language, such as "by an anodic-etch- roughened surface" in claim 20 or "phosphoric-acid-etch," in claim 33, for example, is given no patentable weight.

Response to Arguments

3. Applicant's arguments filed 3/26/01 have been fully considered but they are not persuasive. Regarding applicant's argument that if such a combination were made the resulting memory device/memory array would not be functional, this is not considered persuasive since Wen teaches (see, for example, column 1, lines 5-*) that the trench capacitors are typically used in memory cells (comprising transistors). It was inherent that such a trench capacitor would be conventionally applied and connected to a memory cell, such as that shown by Pfiester '385, Forbes et al. '618, and Wahlstrom '452. The view that the invention is not possible based on the method of formation is considered not persuasive since there are other ways to form the trench capacitor and combine it with a memory cell. If this were not the case, based on applicant's argument, then Wen's device would be non-functional for memory cells even though Wen clearly states that the trench capacitor was made specifically for memory cells.

A majority of the argument of the applicant is based on the method of formation and that the method of formation would not allow the combination of references. However, the claims, as stated, are only based on structure and even if the method of formation were relevant, it would not be persuasive since the structures could be made by different methods and not specifically the one cited by the applicant. For example, the contention that the material covering the transistor and the material forming the electrode are one in the same and therefore, a texturizing etch can not be applied because it would destroy the transistor is not persuasive because a different method could be used to form the same structure. It was inherent that if Wen wanted to connect the trench capacitor to a memory cell (as was intended by Wen), then Wen would have

used a method to connect a transistor to the trench capacitor without making the entire device non-functional.

Claims 20, 21, 23, 24, 27, 28, 33, 34, and 35 still possess Product by-Process language and such language is given no patentable weight. For example, in claim 20, language such as "anodic-etch" is considered Product-by-Process since the "anodic etch" is a process to form a final structural product of a roughened surface.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 703-305-5695. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 703-308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Eugene Lee
June 1, 2001

EDDIE LEE
SUPERVISORY PATENT EXAMINER
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